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C. Earl Hunter, Commissioner
Promoting and protecting the health of the public and the environment.

November 21, 2006

Mr. Michael Collins
Milliken Chemical-Dewey Plant
P.O. Box 817
Inman, SC 29349

RE: Milliken Chemical – Dewey Plant
SCD 069 314 045

Environmental Indicator Status for the Dewey Facility
CA750 – Migration of Contaminated Groundwater Under Control

Dear Mr. Collins,

The Operation Engineering Section of the South Carolina Department of Health and Environmental Control has completed its review of the Environmental Indicator status for the Milliken Chemical – Dewey facility. Prior reviews had determined that Milliken did not meet the requirements for the CA750 – Migration of Contaminated Groundwater Under Control. Based on recent RFI investigations, the Department has determined that a YE determination can be granted. A copy of the EI memo and worksheet are attached to this letter.

If you have any questions please contact me at 803-896-4183.

Sincerely,

Stephen Crowell

Stephen Crowell, P.E., Environmental Engineer
Operations Engineering Section
Division of Waste Management
Bureau of Land and Waste Management

Attachment

CC: Joe Bowers, Division of Hydrogeology
Cindy Carter, Region 2 EQC - Spartanburg

D H E C
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SUBJ: Evaluation of Milliken Chemical's status under the RCRAInfo Corrective Action Environmental Indicator Event Code (CA750) – Migration of Contaminated Groundwater Under Control
EPA I.D. Number: SCD 069 314 045

FROM: Stephen Crowell, P.E., Environmental Engineer SPC
Operations Engineering Section

THRU: Crystal Rippy, Base RCRA Unit Leader CDR
Operations Engineering Section

TO: Rodney Wingard, Section Manager RWW
Operation Engineering Section

DATE: November 3, 2006

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Milliken Chemical's status in relation to the following corrective action event codes defined in RCRAInfo:

1) Migration of Contaminated Groundwater Under Control (CA750).

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This is the fourth EI evaluation conducted for the Milliken Chemical –Dewey Plant. The first evaluation was done in 1996 and resulted in a NO determination for both the CA725 and CA750 indicators. The second evaluation was done in 2000 as an internal document for departmental planning and the previous determination of NO for both CA725 and CA750 remained unchanged. A third evaluation was done in 2002, which resulted in a determination of YE for CA725 and NO for CA750.

III. FACILITY SUMMARY

The Milliken Chemical – Dewey Plant has been in operation since 1963. It currently produces chemicals used in textile finishing, colorants, additives and resins. The plant is located in the Town of Inman, in Spartanburg County, on 260 acres. A RCRA Part B Permit was originally issued to this facility on September 28, 1990 for container storage, which was renewed in 1997. A HSWA Permit was issued at the same time for twenty-eight SWMUs and eight AOCs. Several interim measures have been performed by Milliken to remove source areas of contamination at the facility. The Inactive Landfill (SWMU 21) was excavated, capped and certified closed in 2000. The Chemical Sewer Network (AOC G) was replaced with an entirely new double wall system in 2001. Certain areas of the old sewer were either excavated or capped.

IV. CONCLUSION FOR CA750

This facility has implemented a RFI program and a groundwater remediation system as a means of controlling the contaminated groundwater. The extent of the contaminated groundwater has been delineated. Further remediation and monitoring of the facility will continue as part of the permitted corrective action process. Therefore, it is recommended that CA750 YE be entered into the RCRAInfo system.

Attachment: 1. CA750: Migration of Contaminated Groundwater Under Control

CC: Richard Haynes, P.E., Director, Division of Waste Management
Ken Taylor, P.G., Director, Division of Hydrogeology

ATTACHMENT 1
Documentation of Environmental Indicator Determination
RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: Milliken Chemical – Dewey Plant
Facility Address: 1440 Campton Road, Inman, SC 29349
Facility EPA ID #: SCD 069 314 045

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   _X_ If yes - check here and continue with #2 below,

   ____ If no - re-evaluate existing data, or

   ____ If data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the

Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be "**contaminated**"[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

__X__ If yes - continue after identifying key contaminants, citing appropriate "levels" and referencing supporting documentation.

____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated"

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):_There is groundwater contamination present that exceeds the South Carolina Maximum Contaminant Levels (MCLs). The contaminants consist of three main groups; chloroethenes: PCE, TCE, DCE and VC; chloroethanes: PCA, TCA and DCA; and chlorobenzenes: TCB, DCB and CB. Chloroethenes are present up to a maximum of 41,700 ppb, chloroethanes up to 4,300 ppb and chlorobenzenes up to 25,250 ppb. The most complete and recent sampling data are contained in the *Phase III RCRA Facility Investigation Report*, dated August 15, 2006, which was written by URS Corporation.

1 "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[6] as defined by the monitoring locations designated at the time of this determination?

__X__ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[6]).

____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):_The extent of contaminated groundwater has been bounded by an extensive network of monitoring well locations to the west, south and east. The facility is also currently implementing a groundwater extraction network, which is designed to minimize the movement of the most highly contaminated groundwater. This system was submitted to the Department in March of 2006 and approved in May of 2006.

2 "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

__X__ If yes - continue after identifying potentially affected surface water bodies.

____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):_Groundwater is currently being discharged to Lawson's Fork Creek, which runs along the southern property boundary of the facility. This is confirmed by nested piezometers and well pairs along the creek that show an upward vertical flow gradient.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration[7] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level" and there are no other conditions (e.g., the nature and number of discharging contaminants, or environmental setting) which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[7] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) providing a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

__X__ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[7] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," providing the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identifying if there is evidence that the amount of discharging contaminants is increasing.

____ If unknown – enter "IN" status code in #8.

Rationale and Reference(s): Currently there are MCL or PRG exceedances of groundwater at piezometers PZ-01 and PZ-02, which are adjacent to Lawson's Fork Creek. The constituents in question include: 1,1,2-TCA (17 ppb), 1,2-DCA (4600 ppb), CB (250 ppb), Chloroform (22 ppb), cis-1,2-DCE (290 ppb), PCE (160 ppb) and TCE (1400 ppb). As of the most recent sampling event there is no trend to indicate that these levels are increasing.

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[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

__X__ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):_The current discharge of contaminated groundwater to Lawson's Fork Creek is acceptable at this time. Surface water sampling in the creek shows no contamination above relevant screening levels (MCLs and PRGs) leaving the site. A pore water survey of creek sediments was conducted by the USEPA SESD in July 2004 that showed pore water contamination of chlorobenzenes, chloroethenes and toluene. At this time, there is no data showing contaminated sediments off site. Sediment sample results were compared to EPA Region III Residential RBCs and SSLs (DAF=20). There were no exceedances for ecological risk based on EPA Region IV Ecological Screening Values.

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4 Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

5 The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

__X__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination"

____ If no - enter "NO" status code in #8.

____ If unknown – enter "IN" status code in #8.

Rationale and Reference(s): Groundwater and surface water sampling will continue to be required as part of the ongoing activities at the Milliken Facility. Milliken submits a groundwater and surface water sampling schedule to the Department on a yearly basis detailing the locations for sampling. Milliken is also subject to monitoring requirements under the agreed upon Interim Measures work plan and for satisfying the requirements of the Corrective Action module of the Facility's RCRA Part B Hazardous Waste Permit. Specific well locations for sampling will determined by the Facility and approved by the Department. These locations will include the surface water in Lawson's Fork Creek and appropriate locations downgradient of currently contaminated areas.

8. Check the appropriate RCRIS status codes for the "Migration of Contaminated Groundwater Under Control" EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__X__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Milliken Chemical – Dewey Facility, EPA ID # SCD 069 314 045, located at Inman, South Carolina. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

____ IN - More information is needed to make a determination.

Completed by (signature) Stephen Crowell Date 11-3-06
(print) Stephen Crowell, P.E.
(title) Environmental Engineer

Supervisor (signature) Crystal D. Rippy Date 11-9-06
(print) Crystal Rippy
(title) Base RCRA Unit Leader
(State) South Carolina Department of Health and Environmental Control

Locations where References may be found:

South Carolina Department of Health and Environmental Control
Bureau of Land and Waste Management
8911 Farrow Road, Suite 109
Columbia, SC 29223

Contact telephone and e-mail numbers

(name) Stephen Crowell, P.E., Environmental Engineer
(phone #) 803-896-4183
(e-mail) crowelsr@dhec.sc.gov